

TECHNICAL REPORT
NATICK/TR-84/052

AD A146 346

MODIFICATION OF THE B RATION FOR THE ARCTIC AND DESERT

BY
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JUNE 1984

UNITED STATES ARMY NATICK
RESEARCH & DEVELOPMENT CENTER
NATICK, MASSACHUSETTS 01760



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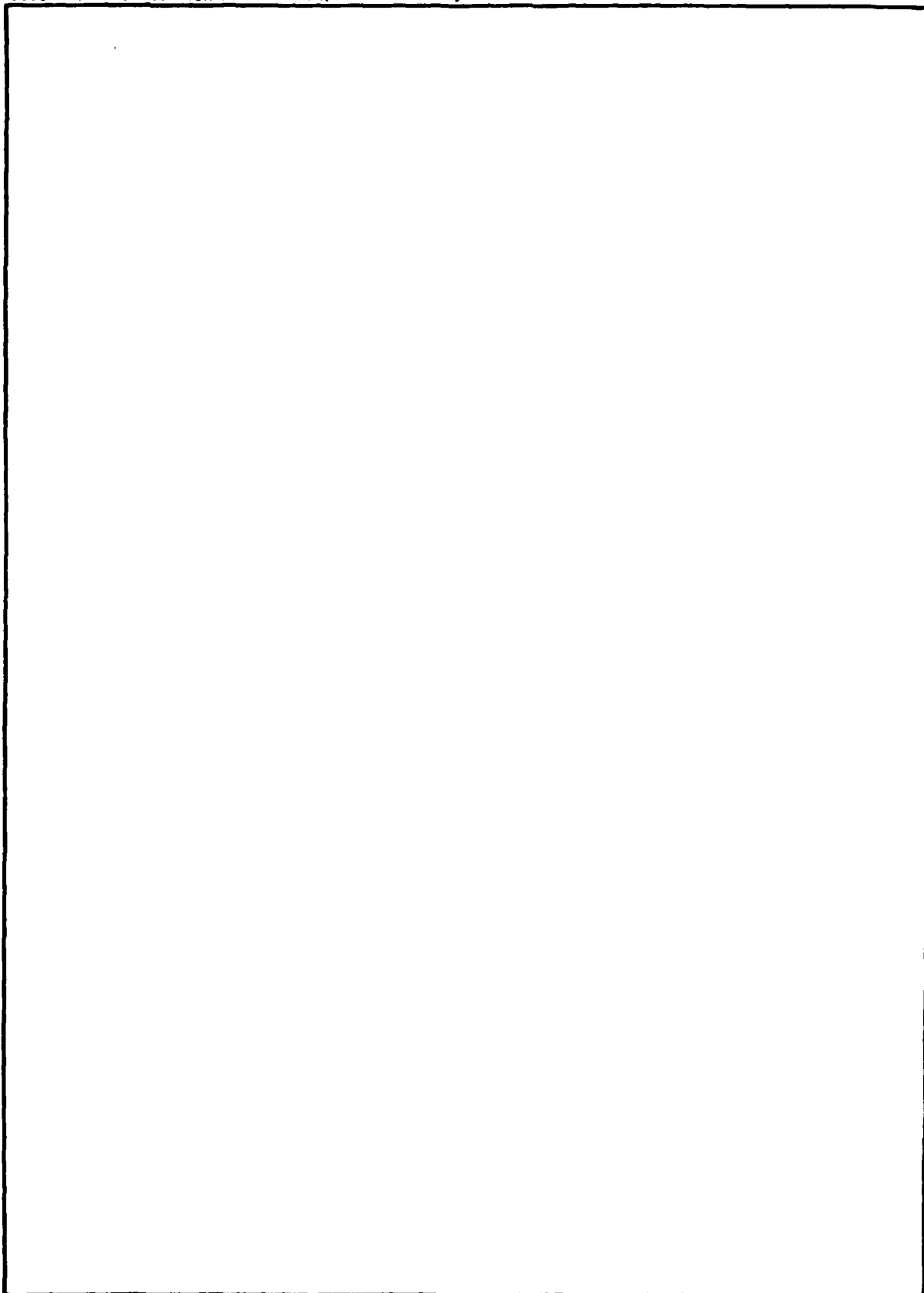
REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM								
1. REPORT NUMBER NATICK/TR-84/052	2. GOVT ACCESSION NO. AD A146 346	3. RECIPIENT'S CATALOG NUMBER								
4. TITLE (and Subtitle) MODIFICATION OF THE B RATION FOR THE ARCTIC AND DESERT		5. TYPE OF REPORT & PERIOD COVERED FINAL TECHNICAL REPORT								
		6. PERFORMING ORG. REPORT NUMBER								
7. AUTHOR(s) Virginia M. White		8. CONTRACT OR GRANT NUMBER(s)								
9. PERFORMING ORGANIZATION NAME AND ADDRESS US Army Natick Research and Development Center Ration Design & Evaluation Branch, Food Technology Division, Natick MA 01760-5018		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS OMA 728012, 19000 Production and Engineering in Support of the DoD Food Program, Work Unit 661								
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Natick Research and Development Center Kansas Street Natick, MA 01760-5000		12. REPORT DATE June 1984								
		13. NUMBER OF PAGES 40								
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified								
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE								
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited										
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)										
18. SUPPLEMENTARY NOTES										
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)										
<table border="0"> <tr> <td>RATIONS</td> <td>MENU(S)</td> </tr> <tr> <td>B RATION</td> <td>RECIPES</td> </tr> <tr> <td>ARCTIC REGIONS</td> <td>ARMED FORCES</td> </tr> <tr> <td>DESERTS</td> <td>WATER SUPPLY</td> </tr> </table>			RATIONS	MENU(S)	B RATION	RECIPES	ARCTIC REGIONS	ARMED FORCES	DESERTS	WATER SUPPLY
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DESERTS	WATER SUPPLY									
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The availability of water for use by military personnel is critical in both desert and arctic environments. Menus and recipes developed for use under these conditions must meet the water requirements for the troops, as well as provide items which are palatable and economical in terms of the amount of potable water needed for preparation. This report assesses the impact of the arctic and desert environments on the Standard B Ration components and suggests menus, based on items in the B Ration, which address the need for a supply of adequate water to military personnel in both extremes of temperature, arctic and desert. The amount of water required for preparation of the food and beverages for 100 persons is given for both menus.										

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PREFACE

This effort was undertaken to recommend modifications of the Standard B Ration for the Armed Forces for the arctic and desert environments.

The work on this project was performed under the Department of Defense Food RDT&E/OMA .19 Production and Engineering Programs. It specifically addresses the Military Service Requirement AAFM78-3, which is as follows:

A need exists to develop specific menus and recipes for the B Ration and Hospital B Ration for use in various geographical areas and standardize these by area in SB10-495 and SB10-495-1. Work on TRADOC scenarios involving Middle Eastern locations indicates that the availability of water is critical in arid/desert environments unless a dedicated water supply distribution system is provided. Water is required for drinking, sanitation and cooking. The use of dehydrated items in the present B Ration increases the need for fresh water for reconstitution of these products. In the Arctic, the use of wet-pack foods may pose a problem because of the tendency of such items to freeze. Here the supply of water is not normally a serious problem. Both areas must be addressed. In hospital feeding situations, recipes for modified diets must be developed, using the components currently available and new items as they are introduced into the procurement system.

The Standard B Ration is described in the following documents:

Standard B Ration
(Army, Marine Corps, Navy)

SB10-495
NAV SUP Pub 274
MCO P101110.25C
(Air Force)
AFR 146-8

Hospital B Ration
(Army, Marine Corps, Navy)

SB10-495-1
NAV SUP Pub 436
MCO P101110.26A
(Air Force)
AFR 166-4

SB10-495-2
Lists the B
Ration compon-
ents which are
stocked as In-
Place Reserves

As Air Force mission requirements for use of the B and Hospital B Rations differ from those of the other Services, these rations are described in the separate publications identified above.

This project undertook to study and evaluate the Standard B Ration and, utilizing only components authorized for B Ration use, recommend changes for adaptation to both arctic and desert environments. The menus and recipes included in the Standard B Ration were being revised at the time this effort was begun (1982). Therefore, the author used the menus in the 1982 draft revision of the Standard B Ration document as the reference menus, called the Standard menu, or the revision, in this report. A few recipe numbers may be changed. When the revised document is finally published, no changes in recipe names are expected.

A draft revision of the Hospital B Ration document cannot be completed until the revised Standard B Ration document is published. Thus, the Hospital B Ration is not addressed in this report.

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MODIFICATION OF THE B RATION FOR THE ARCTIC AND DESERT

INTRODUCTION

One of the requirements of the B ration¹ is that specific menus and recipes be developed for use by troops in various geographical areas. Work by the Army Training and Doctrine Command, involving Middle Eastern locations, indicates that the availability of water is critical in arid/desert environments unless a dedicated water supply distribution system is provided. Water is required for drinking, sanitation and cooking. The use of dehydrated items in the present B Ration increases the need for potable water for rehydration. In the Arctic, the use of wet-pack foods may pose a problem because of the tendency of these items to freeze. A literature search on feeding in the Arctic and the desert, as well as the amounts of water required, provides limited data. Persons at Natick Research and Development Center, familiar with water requirements, provided information on factors used for water planning for the individual soldier.*

As part of a historical data base in a project for the Marines, the Directorate for Systems Analysis and Concept Development found that in both cold weather and desert operations, a common problem existed: water is, without question, the single most critical element for survival.² Future ration design will, by necessity, have to consider this critical issue. The figure given for Multi-Service Water Consumption Factor Planning for an arid environment³ lists four gallons of potable water per person per day for drinking and three gallons per person for food preparation as part of the 20 gallons/person/day that must be planned for by all services. The joint planning factor of 20 gallons/person/day should be used for gross requirement estimating only. The Multi-Service pamphlet points out that once a population exceeds approximately 12,000 or 13,000 troops, requirements for aircraft (for delivery of water) rise rapidly even if consumption is held to a "survival rate" of 7.2 gallons per person per day.

Desert Operations

In a mild desert environment with a minimal amount of activity, an individual requires about two liters** of water a day. With increases in temperature to 100°F (38°C), and with heavy physical activities, a minimum of 12 liters of water a day is required to keep troops functioning properly, according to Consolazio.⁴

In Russia, Solomko⁵ reported that two groups of personnel on a 20 km march in the Kara-Kum desert, where maximum temperature was 102°F (39°C), the group given 5.6 liters of water performed better than the group receiving 1.5 liters of water. He further recommends the following norms for the desert: heavy work, 8 to 9 liters per day; medium work, 6 to 7 liters; light brief work, 5 liters and at rest, 4 liters.

*Personal communications with LTC F.J. Charles, Natick R&D Center Water Coordinator, and MAJ P.L. Caron, Natick R&D Center Project Officer for Development of Arctic Ration (MN83-22).

**One US gallon equals 3.785 liters.

Arctic Operations

Dehydration is not a problem in the desert areas alone. In cold weather climates, the equipment, energy, and time required to melt sufficient quantities of snow for drinking purposes runs completely contrary to the concept of fast troop movement. Natick R&D Center team experience in Norway showed a need for more hot, nondiuretic beverages.* Providing water for these nondiuretic comfort items must be taken into consideration in future planning. McCarroll, Goldman and Denniston⁶ report that in cold, activities such as load, march-rate, terrain and means of mobility increase energy demands of the soldier; these activities will usually mean high sweat rates. Dehydration is accelerated as a result of increased sweat production. The authors found that a command order for troops to increase water consumption in the cold is necessary because the thirst mechanism is depressed.¹ The provision of adequate water may be as important as provision of adequate calories.

Diuresis is not uncommon during initial exposure to the cold. The belief that humans can be taught to adjust to decreased water intake is incorrect. The procedure in the Arctic for obtaining drinking water is slow and tiresome, and frequently troops in the field become voluntarily dehydrated rather than spend their time melting ice or snow for water consumption. For survival, it is imperative that troops be reminded constantly of the deleterious effects of water deprivation in humans.

In a letter from the Commander, Letterman Army Institute of Research to the Commandant, US Marines Corps,⁷ water was cited as the most important arctic consideration. This letter also stated that as caloric requirements are increased, water needs are likewise increased.

Water requirements are also greatly influenced by the nutrient composition of a ration. With increased protein intake, additional fluid is required to eliminate the nitrogen byproducts, especially urea, in the urine. Fat and carbohydrate both yield considerable quantities of water on oxidation and hence decrease water requirements, according to Consolazio.⁴

RECIPE INGREDIENTS

The Standard B Ration is composed of approximately 120 ingredients, which are shelf stable.¹ It is used in field feeding when field kitchens are available, but no refrigeration is provided. There is a Standard 10-day menu and an Alternate menu (see Table 1).

*Personal communication with MAJ P.L. Caron and MAJ W.W. Kastner III, US Marine Corps Liaison Officer to Natick R&D Center.

Meat, Fish and Poultry

In the Standard menu,¹ dehydrated meat, poultry and fish entrees are used 12 times, and a dehydrated Chili with Beans is used once. In the Alternate menu, canned counterparts of the dehydrated products are substituted whenever feasible; if not, another canned product is used. For example, canned tuna is used when dehydrated fish squares are on the menu. Canned Ham Chunks, Beef Chunks with Juices, Luncheon Meat and Canned Chili without Beans are used seven times for lunch or dinner. Dehydrated shrimp is the only dehydrated item which is used as an entree in both the Standard and Alternate menus.

Dehydrated Vegetables

The Standard menu utilizes only canned vegetables (carrots, peas, corn, lima beans, and tomatoes), with the exception of compressed dehydrated green beans, which are used five times in the cycle, dehydrated cabbage and dehydrated potatoes. The alternate menu includes canned green beans and the following dehydrated vegetables in lieu of the canned products listed above: compressed peas, mixed vegetables, compressed cabbage and compressed shredded carrots. Dehydrated potatoes are those with 6% moisture level. Procurement of this product for all troop feeding has proven difficult because industry commonly packs potato granules with an 8% moisture level. Because the B Ration must be stored for long periods of time, and since a 6% moisture level extends shelf-life, stocks of this product are reserved for the B ration.

Other Dehydrates

Dehydrated items are an integral part of the B Ration. Items are nonfat dry milk, egg mix, onions, green peppers, instant soup mixes, instant applesauce and fruit juices, and beverage bases, all of which reduce weight and cube of the ration. Dry mixes for cakes, cookies and puddings are labor saving convenience items which are also included in the B Ration.

RECIPE DEVELOPMENT AND WATER CONSERVATION

In the revision, special attention was paid to water conservation. The water for the 10-day menu was calculated and verified in a field test of the menu. This test has been reported in an earlier paper⁷. The rehydration of dehydrated meat, chicken and shrimp requires from three to six gallons of water for each 100 servings of varied recipes. If the rehydration water is utilized for gravy, less is lost. However, the water from dehydrated fish squares and shrimp has to be discarded.

When canned meats are used, water can be saved by using the drained can juices in the gravy. The recipes using canned beef chunks with juices had been planned so that all drained juices could be utilized. However, in the field test, complaints of too much salt in the gravy caused recipe developers to reevaluate the gravy. The submitted recipes use only one-half of the drained juices, and the gravy is more acceptable. In the future, the problem of high salt levels in canned meat should be addressed.

Water for Beverages

Each day 34-1/2 gallons of water are used for the beverages that are served for breakfast, lunch, and dinner for 100 diners. For breakfast 11-1/3 gallons are used for coffee and cocoa. At noon and night 11-5/8 gallons are used for a half issue of coffee, 25 servings of tea and 50 servings of flavored beverage base for each 100 military. At the discretion of the Commanding Officer, acting on the advice of competent medical authority, different amounts of each may be used. The climate appears to influence the choice of hot or cold beverages. In the Arctic, coffee consumption increases, especially in the warming stations, and Commanders may order an increase of hot soups above the 10 servings planned for the revised ration. In the tropics, the water planned for hot coffee may be used for iced tea or additional fruit-flavored beverages.

Daily Water Usage

The amount of water used in the 10-day Standard menu and Alternate menu is given in Table 2. The amount of water needed to prepare the Standard menu for 100 men for the 10-day cycle is 759 gallons. The Alternate menu requires 673 gallons, a difference of 86 gallons between the two menus. Only one dehydrated item is used as an entree item in the Alternate menu, dehydrated shrimp. The other entree items are canned. Under adverse weather conditions, this can vary considerably, as noted above, but the figures given were calculated for "ball park" planning. Additional recipes not used in the menu are included in this report to allow flexibility in menu planning. If troops were to subsist on this ration for long periods of time, the cooks could vary the meals given the basic ingredients. Water usage could vary if this extended use were a reality.

In planning menu modifications for the Arctic and the desert, the need for extra water in both situations is considered. If canned foods are used, available water can be served for drinking purposes. However, in the Arctic, the canned foods can freeze and become less acceptable. Melting water from ice is time-consuming, and military persons who have returned from the Arctic suggest that recipes that are quickly prepared are appreciated by the cooks, who find the facilities cold even in the shelters provided.* Between meals, hot drinks and soups are most acceptable.

Shipping water in the form of canned foods can be expensive, but should there be a shortage of potable water, the liquids in the canned foods provide at least a minimum source of water.

A first attempt in recommending modifications to the Standard B Ration Menu for both climates is given in Tables 3 and 4.

*Personal communication with attendees at the 1982 Winter Warfare Board Conference held at the Army Research Institute of Environmental Medicine, Natick, MA.

THE ARCTIC MENU

The recommended menu for the Arctic includes considerable use of dehydrated food. Melting snow and ice for water is time consuming, understandably, but improving the acceptance of the finished products must be considered. If the canned food is frozen with a resulting tissue break-down, it is not as acceptable.

The menu follows as closely as possible the Standard B Ration menu. The major changes are as follows:

1. Soup is served each day for both the lunch and dinner menu. The Standard B menu includes a soup on either lunch or dinner a total of 10 times.
2. Dehydrated compressed peas, mixed vegetables and green beans replace their canned counterparts. Dehydrated compressed shredded carrots added to the stock ingredients provide an additional salad item.
3. Dehydrated beef and pork, chicken, shrimp, and fish squares are used extensively. Dehydrated Chili con Carne with Beans is also used as an entree.
4. Brownie mixes are used to replace cookies on several days. When cookies are indicated, they are baked as bars, which consumes less time in panning.
5. Dehydrated cottage cheese is used in place of Cabbage and Green Pepper Salad as another savings in preparation time.
6. Servings of hot biscuits are doubled, and jam, jelly or peanut butter is increased accordingly.
7. Use of a recipe utilizing dehydrated beef patties, in which the patties are baked in gravy rather than grilled, as a means to ensure a hot product and simplify preparation in a cold environment.
8. In the Standard B Ration, 100 servings of coffee are programmed for the morning and 50 servings plus tea and cold beverages are used at noon and evening meals each. The amount of coffee is planned to give 100 servings at each meal. Servings of hot cocoa and tea are increased. The extra hot beverages should provide between-meal beverages, most welcome in the Arctic. Cold drinks, with the exception of breakfast juices, were eliminated.

DESERT MENU

The recommended menu for the desert relies on canned foods for the greater part. When no dehydrates, or minimum dehydrates are used, there is a great savings in the amount of water needed for food preparation. As in the Arctic menu, the menu follows the B menu as closely as possible. The major changes for the desert are the following:

1. When soup is served, the quantities are reduced to 25 servings. Soup is served only five times.
2. Hot cereals are reduced to 50 servings and served only three times instead of the six scheduled in the Standard menu. Fifty servings of grits are served only once instead of the two times on the menu.
3. Canned vegetables replace dehydrated vegetables with the exception of dehydrated onions and green peppers, which are used in both menus.
4. Canned meats and fish, poultry, and chili are used daily. One dehydrated main dish item, shrimp, is used once.

DISCUSSION

The amounts of water used in the recommended Arctic and desert menu modifications are shown in Table 5. A more detailed chart of the quantities used at each meal for food and beverages is given in Tables 9 and 10.

The menu recommended for the desert uses about one third less water than the menu for the Arctic because the latter menu relies heavily on the use of dehydrated products. When canned foods are substituted for their dehydrated counterparts, there is a savings of almost 300 gallons of water per 10-day menu per 100 persons. The Standard B Ration 10-day menu (see Table 1) requires an additional 160 gallons per 100 persons more than the arctic menu for preparation. The average gallons of water per day for each person is 7.59 gallons for the Standard B Ration, 6.03 for the desert menu, and 8.87 for the Arctic menu. Table 6 demonstrates how savings can be accomplished by substituting canned ingredients for dehydrated ingredients. The Standard B Ration contains a mix of dehydrated and canned items and requires approximately 26% more water than the desert menu. The Arctic menu uses four gallons of water more than the Standard B Ration for supplementary hot beverages per 100 persons each day, and the desert menu uses approximately five gallons more per 100 persons for such beverages than the Standard B Ration.

OTHER CONSIDERATIONS

In the United States, selected canned B Ration components are stored in commercial refrigerated warehouses at temperatures between 31.5°F and 34.5°F (-0.28°C and +0.84°C) and at a relative humidity of 55% or less. All foods are subject to natural deterioration, the rate depending upon the food and the storage conditions. Under the standardized conditions described above, storage life is greatly extended as compared to ambient warehouse conditions. However, temperatures in the Arctic or the desert are far more variable, and the storage life obtainable under "standardized" conditions may not be achieved. Information on the storage life of foods at various temperatures is found in DOD 4145.19-R-1, Section 5, Subsistence (1979), which is currently being revised.

When canned foods high in water content, such as fruits and vegetables, are frozen, thawed, and refrozen in repeated cycles, the physical appearance may change due to changes in consistency, such as softening. Some foods, such as canned white potatoes, change consistency with one freeze-thaw cycle. This fact was a consideration in menu planning for the Arctic. An example of accommodating consistency change would be combining canned fruit cocktail with a pudding mix to "disguise," if necessary, any deterioration in the appearance of the canned fruit.

Storage of food at high temperatures 100°F (38°C) and above, may encourage thermophilic bacterial growth in canned food. Cycling of a product from high to low humidity causes products such as sugar to absorb moisture and become hard if not properly packaged. Proper storage and ventilation become extremely important where sharply fluctuating temperatures and high humidity prevail. Although high humidity will not affect food in cans, if the cans are not properly coated this humidity may cause rust damage and subsequent leakage. In addition, high temperatures can speed up the browning reaction in certain foods.

Controlled rotation of stock is inevitable to handle some of these problems. However, not all items in the B Ration are used for all purposes. Used only in the B Ration are dehydrated raw diced beef, beefsteak, beef patties, fish squares and dehydrated cooked diced chicken. Some of these items are stored for up to eight and a half years at refrigerated temperatures. If the suggested menu for the desert were to be adopted, then serious consideration would have to be given to a plan for rotating items not used for regular garrison feeding. Table 7 gives a listing of items authorized only for B Ration usage overseas and afloat, or for therapeutic feeding. Special attention should be given to those items having 12 months or less stability at 90°F (32°C).¹ Work in progress at Natick R&D Center currently indicates that many meat items and dehydrated vegetables can be stored for as long as seven years at 70°F (21°C) or lower without appreciable deterioration in quality. It is the accessory items, such as jams, jellies, margarine, pickles, and dehydrated cottage cheese, that are less stable at temperatures in excess of 90°F (32°C) and would require rotation at more frequent intervals (see Table 8). Under Arctic conditions, these same foods have an extended shelf life and storage would present fewer problems. This information is provided should the suggested menus be adopted.

SUMMARY

This effort was undertaken to recommend modifications of the Standard B Ration 10-day menu to adapt it better for use in arctic and desert environments. The modified B Ration menus recommended in this report for the Arctic and desert require only foods presently authorized for use in the Standard B Ration. The quantities, however, of some of the ingredients for these modified menus will differ from those prescribed in Section V of SB10-495 B Ration Menu Requirements for 1,000 rations.¹ This is particularly true for the soup and beverage components, since the frequency of use and quantity of servings recommended for both the arctic and desert environments are different from those prescribed in the Standard B Ration Menu.

To avoid the preparation problems and quality changes associated with the use of frozen wet-pack foods, the menus recommended for Arctic use maximize dehydrated ingredients and recommend recipes developed for their use.

The desert menu minimizes the amount of water needed for food and beverage preparation to achieve the benefit of the high moisture content in wet-pack foods. Dehydrated ingredients are reduced in the desert menus; therefore, the recipes cited are those using canned meats and vegetables in lieu of dehydrated.

The desert menu decreases the frequency of use and total number of servings of soups and hot beverages over those for the Standard B Ration Menu, while the cold beverage usage and issue are increased. In spite of these changes, a savings in the amount of total water required to prepare the 10-day B Ration menu recommended for desert use has been achieved over the Standard B Ration Menu. This savings, 156 gallons per 100 persons per 10-day period, equates to 20 ounces per man per day.

RECOMMENDATIONS

It is recommended that the B Ration Committee accept the suggested menu modifications for arctic and desert feeding. The menus do not involve deviations from the food items supplied for the B Ration. Water can be saved in the arid desert environment, but the decision on the menu rests with the Menu Committee. By proper selection of individual items, it is possible to save, over the Standard B Ration, 156 gallons of water for each 100 persons in a 10-day cycle. Given a battalion, this amount is significant. For the Arctic, the problems now encountered with frozen wet-pack foods will be alleviated.

TABLE 1. Ten-Day Standard B Ration Menu (SB 10-495)¹

			DAY 1
BREAKFAST	LUNCH	DINNER	
GRAPEFRUIT SECTIONS	CHICKEN NOODLE SOUP (I-2)	BEEF AND GRAVY (G-3)	
HOT OATMEAL (D-6) W/MILK	W/CRACKERS	MASHED POTATOES (J-17)	
*CREAMED GROUND BEEF (G-17)	LUNCHEON MEAT SANDWICH (G-38)	*BUTTERED PEAS (J-13)	
BREAD	CATSUP	BISCUITS (B-2)	
MARGARINE	MUSTARD	MARGARINE	
GRAPE JELLY	BAKED BEANS (J-1)	PEACH JAM	
PEANUT BUTTER	DILL PICKLES	PEARS	
COFFEE (A-2)	*APPLE CRISP (C-15)	PEANUT BUTTER COOKIES (C-7)	
COCOA	COFFEE (A-2)	COFFEE (A-2)	
	TEA	TEA	
	CHERRY BEVERAGE (A-1)	LEMONADE BEVERAGE (A-1)	
*CREAMED GROUND BEEF (G-17)	*APPLE CRISP (C-15)	*BUTTERED PEAS (J-13)	
(Using CANNED HAMBURGERS)	(Using CANNED PREPARED APPLE PIE FILLING)	(Using PEAS DEHYDRATED COMPRESSED)	
			DAY 2
BREAKFAST	LUNCH	DINNER	
*ORANGE JUICE (F-3)	TOMATO VEGETABLE NOODLE	*CREOLE CHICKEN (G-25)	
CHEESE OMELET (E-2)	SOUP (I-5) W/CRACKERS	STEAMED RICE (D-4)	
CATSUP	*GRILLED HAMBURGERS WITH	**BUTTERED GREEN BEANS (J-2a)	
BACON (G-1)	FRIED ONIONS (G-18)	***CABBAGE & GREEN PEPPER SALAD (H-1)	
BREAD	CATSUP	BREAD	
MARGARINE	MUSTARD	MARGARINE	
STRAWBERRY JAM	**HASHED BROWN POTATOES (J-15)	PINEAPPLE	
PEANUT BUTTER	BUTTERED CORN (J-10)	OATMEAL COOKIES (C-6)	
COFFEE (A-2)	BREAD	COFFEE (A-2)	
COCOA	DILL PICKLES	TEA	
	MARGARINE	FRUIT PUNCH BEVERAGE (A-1)	
	CHOCOLATE PUDDING (C-16)		
	COFFEE (A-2)		
	TEA		
	GRAPE BEVERAGE (A-1)		
*ORANGE JUICE	*BAKED HAMBURGERS (G-18)	*CREOLE CHICKEN (G-25)	
(Using CANNED ORANGE JUICE)	(Using CANNED HAMBURGERS)	(Using CANNED CHICKEN)	
	**HASHED BROWN POTATOES (J-15)	**BUTTERED GREEN BEANS (J-2a)	
	(Using POTATOES WHITE MEY DICED)	(Using CANNED GREEN BEANS)	
		***CABBAGE AND GREEN PEPPER SALAD (H-1)	
		(Using CABBAGE DEHYDRATED COMPRESSED)	
			DAY 3
BREAKFAST	LUNCH	DINNER	
*GRAPEFRUIT AND ORANGE JUICE (F-3)	*CHILI MACARONI (G-29)	BEEF NOODLE SOUP (I-1) W/CRACKERS	
HOMINY GRITS (D-6)	**BUTTERED PEAS (J-13)	*SCALLOPED HAM AND POTATOES (G-33)	
GRIDDLE CAKES (B-5) WITH	PEACH & COTTAGE CHEESE SALAD (H-4)	**VEGETABLE MEDLEY (J-24)	
HOT MAPLE SYRUP	CORN BREAD (B-3)	BREAD	
BACON (G-1)	MARGARINE	MARGARINE	
BREAD	FRUIT COCKTAIL PUDDING (C-17)	DEVILS FOOD CAKE (C-1)	
MARGARINE	SUGAR COOKIES (C-8)	WITH VANILLA ICING (C-3)	
BLACKBERRY JELLY	COFFEE (A-2)	COFFEE (A-2)	
PEANUT BUTTER	TEA	TEA	
COFFEE (A-2)	CHERRY BEVERAGE (A-1)	ORANGE BEVERAGE (A-1)	
COCOA			
*GRAPEFRUIT AND ORANGE JUICE	*CHILI MACARONI (G-28)	*SCALLOPED HAM AND POTATOES (G-33)	
(Using CANNED GRAPEFRUIT	(Using CHILI CON CARNE	Using POTATOES WHITE DEHYDRATED	
JUICE and ORANGE JUICE)	DEHYDRATED W/BEANS)	DICED)	
	**BUTTERED PEAS (J-13)	**VEGETABLE MEDLEY (J-22)	
	(Using PEAS DEHYDRATED COMPRESSED)	(Using MIXED VEGETABLES DEHYDRATED COMPRESSED)	

TABLE 1. Ten-Day Standard B Ration Menu (SB 10-495)¹ (Cont'd)

BREAKFAST	LUNCH	DINNER	DAY 4
*ORANGE JUICE (F-3) HOT OATMEAL (D-6) W/MILK **CREAMED GROUND BEEF (C-17) BREAD MARGARINE PEACH JAM PEANUT BUTTER COFFEE (A-2) COCOA	TOMATO VEGETABLE NOODLE SOUP (I-5) W/CRACKERS BAKED LUNCHEON MEAT WITH PINEAPPLE SAUCE (G-36) *POTATOES AU GRATIN (J-20) **BUTTERED GREEN BEANS (J-2a) DILL PICKLES BREAD MARGARINE ***APPLESAUCE (F-2) BUTTERSCOTCH BROWNIES (C-4) †ICE CREAM (C-19) COFFEE (A-2) TEA LEMONADE BEVERAGE (A-1)	*BEEF AND GRAVY WITH VEGETABLES (G-5) MASHED POTATOES (J-17) CORN RELISH (J-11) BISCUITS (B-2) STRAWBERRY JAM MARGARINE CRANBERRY CRUNCH (C-18) COFFEE (A-2) TEA GRAPE BEVERAGE (A-1)	
*ORANGE JUICE (Using CANNED ORANGE JUICE) **CREAMED GROUND BEEF (G-17) (Using CANNED HAMBURGERS)	*POTATOES AU GRATIN (J-18) (Using POTATOES WHITE DEHY- DRATED, DICED) †ICE CREAM IS A MARINE CORPS REQUIREMENT **BUTTERED GREEN BEANS (J-2) (Using CANNED GREEN BEANS) ***APPLESAUCE (Using CANNED APPLESAUCE)	*BEEF AND GRAVY W/VEGETABLES (G-6) (Using CANNED BEEF CHUNKS W/NATURAL JUICES and PEAS DEHYDRATED COMPRESSED)	
BREAKFAST	LUNCH	DINNER	DAY 5
TOMATO JUICE (F-4) HOT HOMINY GRITS (D-6) SCRAMBLED EGGS WESTERN STYLE (E-1) CATSUP BREAD MARGARINE PEANUT BUTTER GRAPE JELLY COFFEE (A-2) COCOA	CHICKEN NOODLE SOUP (I-2) W/CRACKERS *CHILIBURGERS (G-16) **HASHED BROWN POTATOES (J-15) ***CABBAGE & GREEN PEPPER SALAD (H-1) BREAD MARGARINE VANILLA PUDDING (C-16) CHOCOLATE COOKIES (C-5) COFFEE (A-2) TEA FRUIT PUNCH BEVERAGE (A-1) *CHILIBURGERS (Using CANNED HAMBURGERS AND CHILI CON CARNE DEHY W/BEANS) **HASHED BROWN POTATOES J-15) (Using POTATOES WHITE DEHYDRATED DICED) ***CABBAGE AND GREEN PEPPER SALAD (H-1) (Using CABBAGE DEHY COMPRESSED)	SHRIMP CREOLE (G-44) STEAMED RICE (D-4) *BUTTERED CARROTS AND PEAS (J-9) BREAD MARGARINE **APPLE CRISP (C-15) COFFEE (A-2) TEA CHERRY BEVERAGE (A-1) *BUTTERED CARROTS AND PEAS (J-9) (Using PEAS DEHYDRATED COMPRESSED) **APPLE CRISP (C-15) (Using CANNED PREPARED APPLE PIE FILLING)	
BREAKFAST	LUNCH	DINNER	DAY 6
*GRAPEFRUIT AND ORANGE JUICE (F-3) **ROAST BEEF HASH (G-8) CATSUP CHEESE OMELET (E-2) BREAD MARGARINE PEANUT BUTTER STRAWBERRY JAM COFFEE (A-2) COCOA	*CHICKEN POT PIE (G-22) CRANBERRY SAUCE MASHED POTATOES (J-17) BUTTERED CORN (J-10) BREAD MARGARINE YELLOW CAKE (C-1) WITH CHOCOLATE ICING (C-2) COFFEE (A-2) TEA ORANGE BEVERAGE (A-1)	ONION SOUP (I-3) W/CRACKERS BAKED HAM MACARONI AND TOMATOES (G-30) *BUTTERED GREEN BEANS (J-2a) BREAD MARGARINE CHERRY COBBLER (C-10) COFFEE (A-2) TEA LEMONADE BEVERAGE (A-1)	
*GRAPEFRUIT AND ORANGE JUICE (Using CANNED GRAPEFRUIT JUICE and ORANGE JUICE) **ROAST BEEF HASH (G-8) (Using POTATOES WHITE DEHYDRATED DICED)	*CHICKEN POT PIE W/BISCUIT TOPPING (G-22) (Using CANNED CHICKEN and BISCUIT MIX and POTATOES WHITE DEHYDRATED DICED)	*BUTTERED GREEN BEANS (J-2) (Using CANNED GREEN BEANS)	

TABLE 1. Ten-Day Standard B Ration Menu (SB 10-495)¹ (Cont'd)

DAY 7

BREAKFAST	LUNCH	DINNER
*ORANGE JUICE (F-3) HOT OATMEAL (D-6) W/MILK SCRAMBLED EGGS (E-1) CATSUP GRILLED LUNCHEON MEAT (G-37) QUICK COFFEE CAKE (B-6) MARGARINE GRAPE JELLY PEANUT BUTTER COFFEE (A-2) COCOA	BEEF NOODLE SOUP (I-1) W/CRACKERS BARBECUED BEEF (SLOPPY JOE)(G-2) *BUTTERED PEAS (J-13) **CABBAGE & CARROT SALAD W/COOKED SALAD DRESSING (H-1) BREAD MARGARINE ***APPLESAUCE (F-2) CHOCOLATE BROWNIES (C-4) W/CHOCOLATE ICING (C-2) †ICE CREAM (C-19) COFFEE (A-2) TEA FRUIT PUNCH BEVERAGE (A-1)	*BREADED PORK CHOPS AND CREAM GRAVY (G-41) **APPLESAUCE (F-1) MASHED POTATOES (J-17) ***BUTTERED SUCCOTASH (J-20) BREAD MARGARINE PINEAPPLE RAISIN OATMEAL COOKIES (C-6) COFFEE (A-2) TEA CHERRY BEVERAGE (A-1)
*ORANGE JUICE (Using CANNED ORANGE JUICE)	*BUTTERED PEAS (J-13) (Using PEAS DEHYDRATED COMPRESSED) **CABBAGE AND CARROT SALAD W/COOKED SALAD DRESSING (H-1) (Using CABBAGE DEHYDRATED COMPRESSED) ***APPLESAUCE (Using CANNED APPLESAUCE) †ICE CREAM IS A MARINE CORPS REQUIREMENT	*HOT HAM CHUNKS (Using CANNED HAM CHUNKS) **APPLESAUCE (F-1) (Using CANNED APPLESAUCE) ***VEGETABLE MEDLEY (J-22) (Using MIXED VEGETABLES DEHYDRATED COMPRESSED)

DAY 8

BREAKFAST	LUNCH	DINNER
GRAPEFRUIT SECTIONS HOT HOMINY GRITS (D-6) FRENCH TOAST (B-4) WITH HOT MAPLE SYRUP BACON (G-1) BREAD MARGARINE PEANUT BUTTER BLACKBERRY JELLY COFFEE (A-2) COCOA	*BEEFSTEAK AND GRAVY (G-9) MASHED POTATOES (J-17) STEWED TOMATOES (J-21) DILL PICKLES BREAD MARGARINE **PEACH COBBLER (C-11) COFFEE (A-2) TEA ORANGE BEVERAGE (A-1)	CHICKEN NOODLE SOUP (I-2) W/CRACKERS *CHILI CON CARNE (G-26) STEAMED RICE (D-4) **BUTTERED GREEN BEANS (J-2a) CORN BREAD (B-3) MARGARINE PEARS CHOCOLATE COOKIES (C-5) COFFEE (A-2) TEA GRAPE BEVERAGE (A-1)
	*BEEF STEAK AND GRAVY (G-3) (Using CANNED BEEF CHUNKS) **PEACH COBBLER (C-11) (Using CANNED PREPARED PEACH PIE FILLING)	*CHILI CON CARNE (G-27) (Using CANNED CHILI CON CARNE WITHOUT BEANS and CANNED KIDNEY BEANS) **BUTTERED GREEN BEANS (J-2) (Using CANNED GREEN BEANS)

DAY 9

BREAKFAST	LUNCH	DINNER
*GRAPEFRUIT AND ORANGE JUICE (F-3) HOT OATMEAL (D-6) SCRAMBLED EGGS WITH BACON (E-1) CATSUP BREAD MARGARINE PEANUT BUTTER STRAWBERRY JAM COFFEE (A-2) COCOA	*BEEF PATTIES JARDINIÈRE (G-14) MASHED POTATOES (J-17) BUTTERED CORN (J-10) PINEAPPLE & COTTAGE CHEESE SALAD (H-4) BREAD MARGARINE MARBLE CAKE (C-1) WITH CHOCOLATE ICING (C-2) COFFEE (A-2) TEA LEMONADE BEVERAGE (A-1)	TOMATO VEGETABLE NOODLE SOUP (I-5) W/CRACKERS *FRIED FISH SQUARES (G-46) CATSUP MACARONI AND CHEESE (D-2) **BUTTERED PEAS (J-13) BREAD MARGARINE FRUIT COCKTAIL SUGAR COOKIES (C-8) COFFEE (A-2) TEA FRUIT PUNCH BEVERAGE (A-1)
*GRAPEFRUIT AND ORANGE JUICE (Using GRAPEFRUIT JUICE CANNED and ORANGE JUICE)	*BEEF PATTIES JARDINIÈRE (G-15) (Using CANNED HAMBURGERS and PEAS DEHYDRATED COMPRESSED)	*TUNA LOAF (G-48) (Using CANNED TUNA) **BUTTERED PEAS (J-13) (Using PEAS DEHYDRATED COMPRESSED)

TABLE 1. Ten-Day Standard B Ration Menu (SB 10-495)¹ (Cont'd)

BREAKFAST	LUNCH	DINNER	DAY 10
*ORANGE JUICE (F-3) HOT HOMINY GRITS (D-6) **ROAST BEEF HASH (G-8) CATSUP BREAD MARGARINE PEANUT BUTTER PEACH JAM COFFEE (A-2) COCOA	*BAKED CHICKEN AND RICE (G-21) CRANBERRY SAUCE **BUTTERED GREEN BEANS (J-2a) BISCUITS (B-2) MARGARINE PEACHES CHOCOLATE BROWNIES (C-4) W/CHOCOLATE ICING (C-2) ***ICE CREAM (C-19) COFFEE (A-2) TEA ORANGE BEVERAGE (A-1)	ONION SOUP (I-3) W/CRACKERS *PORK CHOPS IN TOMATO SAUCE (G-39) MASHED POTATOES (J-17) **BAVARIAN CABBAGE (J-5) DILL PICKLES BREAD MARGARINE CHERRY CRUNCH (C-18) COFFEE (A-2) TEA GRAPE BEVERAGE (A-1)	
*ORANGE JUICE (Using CANNED ORANGE JUICE) **ROAST BEEF HASH (G-8) (Using POTATOES WHITE DEHY DICED)	*BAKED CHICKEN AND RICE (G-21) (Using CANNED CHICKEN) **BUTTERED GREEN BEANS (J-2) (Using CANNED GREEN BEANS) ***ICE CREAM IS A MARINE CORPS REQUIREMENT	*HOT HAM CHUNKS (Using CANNED HAM CHUNKS) **BAVARIAN CABBAGE (J-5) (Using CABBAGE DEHYDRATED COMPRESSED)	

NOTES: In general, the Standard B Ration Menu includes canned (wet) meats and vegetables, although there are a few exceptions that use dehydrated components. Generally, for each canned meat and vegetable there is a dehydrated alternate provided; when a dehydrated entree or vegetable is included in the Standard Menu, a canned alternate is prescribed. On TABLE 1, the items for which alternates are prescribed are asterisked or indicated † and the appropriate alternate menu item is listed below the menu.

TABLE 2. Water Requirements Per Meal for the Standard B Ration 10-Day Cycle Menu*
(100 Servings)

	Day 1		Day 2		Day 3		Day 4		Day 5	
	Std	Alt	Std	Alt	Std	Alt	Std	Alt	Std	Alt
Breakfast, Gallons	26	23**	19	14**	24	19	31	23	23	23
Lunch, Gallons	20	18**	34	28**	22	25**	32	26**	38	32**
Dinner, Gallons	18	22**	26	19**	24	29**	23	18**	21	21
Total	64	63	79	61	70	73	86	67	82	76

	Day 6		Day 7		Day 8		Day 9		Day 10	
	Std	Alt	Std	Alt	Std	Alt	Std	Alt	Std	Alt
Breakfast, Gallons	26	22**	27	22**	17	17	23	18**	31	27**
Lunch, Gallons	23	20**	25	29**	21	17**	21	20**	23	18**
Dinner, Gallons	28	25	22	20**	31	23**	28	29**	32	26**
Total	77	67	74	71	69	57	72	67	86	71

Total Gallons, Standard Menu Items	759
Total Gallons, Using Alternate Menu Items	673
Total Gallon Difference	86

*Includes 34.5 gallons of water per day for meal beverages (11.3 gallons for breakfast and 11.6 gallons each for lunch and dinner meals).

**Use of Alternate Menu Items.

Note: Gallons are rounded.

TABLE 3. Recommended Menu for the Arctic

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Total Water</u> <u>Required</u> (gal/day)
<u>Day 1</u>			85.1198
Breakfast			
Grapefruit Sections			
Hot Oatmeal	D-6	5.0	
with Milk		2.75	
Creamed Ground Beef	G-17	6.75	
Bread			
Margarine			
Grape Jelly			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
Chicken Noodle Soup	I-1	6.5	
with Crackers			
Luncheon Meat Sandwich	G-38		
Mustard			
Baked Beans	J-1	0.1875	
Dill Pickles			
Apple Crisp	C-15	2.0	
Coffee	A-2	10.125	
*Cocoa: 25 servings		1.1719	
Tea: 25 servings		1.5625	
Dinner			
*Beef Noodle Soup	I-1	6.5	
*Baked Spanish Beef Patties	G-12	4.375	
Mashed Potatoes	J-17	3.375	
*Buttered Peas	J-13-1	4.0	
Biscuits	B-2	2.0	
Margarine			
Peach Jam			
*Baked Rice Pudding	C-new ⁺	3.1041	
Coffee	A-2	10.125	
*Cocoa: 25 servings		1.1719	
Tea: 25 servings		1.5625	

⁺New recipe to be used is Armed Forces Recipe Service⁹ recipe J-15 made using nonfat dry milk and dehydrated egg mix.

NOTE: Recipe numbers are those cited in SB 10-495¹ (1982 draft revision); each recipe yields 100 portions unless fewer servings are indicated. Menu changes or additions to Standard B Ration menu are indicated by an asterisk.

TABLE 3. Recommended Menu for the Arctic (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Total Water</u> <u>Required</u> (gal/day)
<u>Day 2</u>			85.2657
Breakfast			
Orange Juice	F-3	4.75	
Cheese Omelet (Baked)	F-2 Var.	3.1250	
Bacon	G-1		
Bread			
Margarine			
Strawberry Jam			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
Tomato Vegetable Noodle Soup	I-5	6.25	
*Hamburgers Baked in Gravy	G-19	6.0	
Hashed Brown Potatoes	J-15	6.5	
Buttered Corn	J-10		
Catsup			
Mustard			
Margarine			
Chocolate Pudding	C-16	2.75	
Coffee	A-2	10.125	
*Cocoa: 25 servings		1.1719	
Tea: 25 servings		1.5625	
Dinner			
*Onion Soup with Crackers	I-3	6.25	
Creole Chicken	G-25	4.25	
Steamed Rice	D-4	2.75	
Buttered Green Beans	J-2a	3.5	
Bread			
Margarine			
*Blackberry Jelly			
*Butterscotch Brownies	C-4	0.5625	
Coffee	A-2	10.125	
*Cocoa: 25 servings		1.1719	
Tea: 25 servings		1.5625	

TABLE 3. Recommended Menu for the Arctic (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Total Water</u> <u>Required</u> (gal/day)
<u>Day 3</u>			87.2033
Breakfast			
Grapefruit and Orange Juice	F-3-1	4.75	
Hot Hominy Grits	D-6	4.5	
Griddle Cakes	B-5	2.1875	
Hot Maple Syrup			
Bacon	G-1		
Bread			
Margarine			
Blackberry Jelly			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
*Beef Noodle Soup with Crackers	I-1	6.5	
Chili Macaroni	G-28	6.125	
Buttered Peas	G-15-1	4.0	
Corn Bread	B-3	1.375	
Margarine			
Fruit Cocktail Pudding	C-17	2.1875	
Sugar Cookie Bars	C-8-1	0.1406	
Coffee	A-2	10.125	
Tea: servings		1.5625	
*Cocoa: 25 servings		1.1719	
Dinner			
*Onion Soup with Crackers	I-3	6.25	
Scalloped Ham and Potatoes	G-33	5.3907	
Vegetable Medley	J-22-1	4.5	
Bread			
Peanut Butter			
Margarine			
Devil's Food Cake	C-1	0.6250	
with Vanilla Icing	C-3	0.0938	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	

TABLE 3. Recommended Menu for the Arctic (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Total Water</u> <u>Required</u> (gal/day)
<u>Day 4</u>			96.9845
Breakfast			
Orange Juice	F-3	4.75	
Hot Oatmeal	D-6	5.00	
with Milk		2.75	
Creamed Ground Beef	G-17	6.75	
Bread			
Margarine			
Peach Jam			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
*Chicken Noodle Soup	I-2	6.5	
with Crackers			
Baked Luncheon Meat	G-36	0.2813	
with Pineapple Sauce			
Potatoes Au Gratin	J-18	7.0	
Buttered Green Beans	J-2a	3.5	
Dill Pickles			
Bread			
Margarine			
Applesauce	F-2	3.0	
Butterscotch Brownies	C-4	0.5625	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	
Dinner			
*Onion Soup with Crackers	I-3	6.25	
Beef and Gravy with Vegetables	G-5	6.1875	
Mashed Potatoes	J-17	3.375	
Corn Relish	J-11	0.5	
Biscuits (double)	B-2	2.0	
Strawberry Jam			
Margarine			
Cranberry Crunch	C-18		
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	

TABLE 3. Recommended Menu for the Arctic (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Total Water</u> <u>Required</u> (gal/day)
<u>Day 5</u>			<u>88.5782</u>
Breakfast			
*Orange Juice	F-3	4.25	
Hot Hominy Grits	D-6	4.5	
Scrambled Eggs, Western Style	E-1	3.625	
Bread			
Margarine			
Peanut Butter			
Grape Jelly			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
*Beef Noodle Soup with Crackers	I-1	6.5	
*Chili Con Carne with Beans (1-1/2 cup serv)	G-26	6.75	
*Cottage Cheese Salad	H-4 Var.	1.0625	
Bread			
Margarine			
Vanilla Pudding	C-16	2.75	
*Chocolate Brownies	C-4	0.5625	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	
Dinner			
*Onion Soup with Crackers	I-1	6.25	
Shrimp Creole	G-44	4.5	
Steamed Rice	D-4	2.75	
*Buttered Peas	J-13 Var.	4.0	
Bread			
Margarine			
Apple Crisp	C-15	2.0	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	

TABLE 3. Recommended Menu for the Arctic (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 6</u>			<u>85.908</u>
Breakfast			
Grapefruit and Orange Juice	F-3	4.75	
Roast Beef Hash	G-8	7.5	
Catsup			
Cheese Omelet	E-2	2.75	
Bread			
Margarine			
Peanut Butter			
Strawberry Jam			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
*Tomato Vegetable Noodle Soup	I-5	6.25	
with Crackers			
Chicken Pot Pie	G-22	6.9375	
Cranberry Sauce			
Mashed Potatoes	J-17	3.375	
Buttered Corn	J-10		
Bread			
Peach Jam			
Margarine			
Yellow Cake with Chocolate Icing	C-1, C-2	0.7188	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	
Dinner			
*Chicken Noodle Soup with	I-2	6.5	
Crackers			
Baked Ham, Macaroni and Tomatoes	G-30	4.6563	
Butter Green Beans	J-2a	3.5	
Bread			
Margarine			
Cherry Cobbler	C-10	0.3750	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	

TABLE 3. Recommended Menu for the Arctic (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 7</u>			<u>89.7345</u>
Breakfast			
Orange Juice	F-3	4.75	
Hot Oatmeal with Milk	D-6	7.75	
Scrambled Eggs	E-1	2.625	
Grilled Luncheon Meat	G-37		
Quick Coffee Cake	B-6	0.5	
Margarine			
Grape Jelly			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
Beef Noodle Soup with Crackers	I-1	6.5	
Barbecued Beef	G-2	0.625	
Buttered Peas	J-13-1	4.0	
*Cottage Cheese Salad	H-4 Var.	1.0625	
Bread			
Margarine			
Chocolate Brownies with	C-4, C-2	0.6563	
Chocolate Icing			
Coffee	A-2	10.125	
Tea: 25 servings		1.1719	
*Cocoa: 25 servings		1.5625	
Dinner			
*Onion Soup with Crackers	I-3	6.25	
Bread Pork Chops in Cream Gravy	G-41	5.4375	
Mashed Potatoes	J-17	3.375	
*Vegetable Medley	J-22-1	4.5	
Bread			
Margarine			
Strawberry Jam			
Raisin Oatmeal Bars	C-6	0.1250	
*Applesauce Desert	F-2	3.0	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	

TABLE 3. Recommended Menu for the Arctic (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 8</u>			83.7657
Breakfast			
Grapefruit Juice	F-4	4.75	
Hot Hominy Grits	D-6	4.5	
French Toast	B-4	1.25	
with Hot Maple Syrup			
Bacon	G-1		
Bread			
Margarine			
Peanut Butter			
Blackberry Jelly			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
*Tomato Vegetable Noodle Soup	I-5	6.25	
with Crackers			
Beef Steak and Gravy	G-9	6.0	
Mashed Potatoes	J-17	3.375	
Stewed Tomatoes	J-21		
Dill Pickles			
Bread			
Margarine			
Peanut Butter			
Peach Cobbler	C-11	0.25	
Coffee	A-2	10.125	
Tea: 25 servings			
*Cocoa: 25 servings		1.1719	
Dinner			
Chicken Noodle Soup with Cracker	I-2	6.5	
Chili Con Carne	G-26	4.5	
Steamed Rice	D-4	2.75	
Buttered Green Beans	J-2a	3.5	
Corn Bread	B-3	1.3750	
Margarine			
Pears			
Chocolate Cookie Bars	C-5-3	0.1875	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	

TABLE 3. Recommended Menu for the Arctic (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 9</u>			86.6876
Breakfast			
Grapefruit and Orange Juice	F-3	4.75	
Hot Hominy Grits	D-6	4.5	
Scrambled Eggs	E-1	2.625	
Bacon	G-1		
Bread			
Margarine			
Peanut Butter			
Strawberry Jam			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
*Onion Soup with Crackers	I-3	6.25	
Beef Patties Jardiniere	G-14	4.3125	
Mashed Potatoes	J-17	3.375	
Buttered Corn	J-10		
Pineapple and Cottage Cheese	H-4	1.0625	
Salad			
Bread			
Margarine			
Peach Jam			
Marble Cake with Chocolate Icing	C-1, C-2	0.7188	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	
Dinner			
*Beef Noodle Soup and Crackers	I-1	6.5	
Fried Fish Squares	G-46	3.0	
Catsup			
Macaroni and Cheese	D-2	6.8750	
Buttered Peas	J-13	4.0	
Bread			
Margarine			
Fruit Cocktail			
Sugar Cookie Bars	C-8-3	0.1406	
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	

TABLE 3. Recommended Menu for the Arctic (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 10</u>			97.7658
Breakfast			
Orange Juice	F-3	4.75	
Hot Oatmeal with Milk	D-6	7.75	
Roast Beef Hash	G-8	7.5	
Catsup			
Bread			
Margarine			
Peach Jam			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
*Tea: 25 servings		1.5625	
Lunch			
*Tomato Vegetable Noodle Soup	I-5	6.25	
Baked Chicken and Rice	G-21	6.0625	
Cranberry Sauce			
Buttered Green Beans	J-2a	3.5	
Biscuit	B-2	2.0	
Margarine			
Chocolate Brownies with	C-4, C-2	0.6563	
Chocolate Icing			
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	
Dinner			
*Chicken Noodle Soup with	I-2	6.5	
Crackers			
Baked Pork Chops in Tomato Sauce	G-39	6.1875	
Mashed Potatoes	J-17	3.375	
Bavarian Cabbage	J-5	4.6563	
Dill Pickles			
Bread			
Margarine			
Cherry Crunch	C-18		
Coffee	A-2	10.125	
Tea: 25 servings		1.5625	
*Cocoa: 25 servings		1.1719	

TABLE 4. Recommended Menu for the Desert

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 1</u>			55.9533
Breakfast			
Grapefruit Sections			
Hot Oatmeal	D-6	2.5	
with Milk: 50 servings		1.375	
Creamed Ground Beef	G-17-1	4.25	
Bread			
Margarine			
Grape Jelly			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
Chicken Noodle Soup	I-2	1.625	
25 servings			
Luncheon Meat Sandwich	G-38		
Mustard			
Baked Beans	J-1	0.1875	
Dill Pickles			
Apple Crisp	C-15-1		
Coffee: 25 servings	A-2	2.5313	
Cherry Beverage: 100 servings	A-1	10.0	
Tea: 25 servings		1.5625	
Dinner			
Beef and Gravy	G-3	2.0	
Mashed Potatoes	J-17	3.375	
Buttered Peas	J-13		
Biscuits	B-2	1.0	
Margarine			
Peach Jam			
Pears			
Peanut Butter Bars	C-7 Var.	0.1563	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Lemonade Beverage:	A-1	10.0	
100 servings			

NOTE: Recipe numbers are those cited in SB10-495¹ (1982 draft revision); each recipe yields 100 portions, unless fewer servings are indicated. Menu changes or additions to the Standard B Ration Menu are indicated by an asterisk.

TABLE 4. Recommended Menu for the Desert (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 2</u>			61.0470
Breakfast			
Orange Juice (Canned)	F-3		
Cheese Omelet	F-2	3.1250	
Bacon	G-1		
Bread			
Margarine			
Strawberry Jam			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
Baked Hamburgers with Fried Onions	G-20-2 (New)	1.5	
Hashed Brown Potatoes	J-15	6.5	
Buttered Corn	J-10		
Bread			
Dill Pickles			
Catsup			
Mustard			
Margarine			
Chocolate Pudding	C-16	2.75	
Coffee: 25 servings	A-2	2.5313	
Grape Beverage: 100 servings		10.0	
Tea: 25 servings		1.5625	
Dinner			
Creole Chicken	G-25-1	1.0	
Steamed Rice	D-4	2.75	
Buttered Green Beans	J-2a		
Cabbage and Green Pepper Salad	H-1	3.8125	
Bread			
Margarine			
Pineapple			
Oatmeal Cookie Bars	C-6	0.1250	
Coffee: 25 servings	A-2	2.5313	
Fruit Punch Beverage: 100 servings	A-1	10.0	
Tea: 25 servings		1.5625	

*New recipe variation combines Variation 1 of G-20 and adds dry onions and water as for Variation 1 of B Ration, G-18 Baked Hamburger with gravy.

TABLE 4. Recommended Menu for the Desert (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 3</u>			61.1018
Breakfast			
Grapefruit and Orange Juice canned			
Griddle Cakes	B-5	2.1875	
Hot Maple Syrup			
Bacon	G-1		
Bread			
Margarine			
Blackberry Jelly			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
Chili Macaroni	G-29	5.3672	
Buttered Peas	J-13		
Cornbread	B-3	4.0	
Margarine			
Fruit Cocktail Pudding	C-17	2.1875	
Sugar Cookie Bars	C-8-3	0.1406	
Coffee: 25 servings	A-2	2.5313	
Cherry Beverage: 100 servings	A-1	10.0	
Tea: 25 servings		1.5625	
Dinner			
Beef Noodle Soup with Crackers:	I-1	1.6250	
25 servings			
Scalloped Ham and Potatoes	G-33	5.3907	
Vegetable Medley	J-22-1		
Bread			
Margarine			
Devil's Food Cake	C-1	0.6250	
with Vanilla Icing	C-3	0.0938	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Orange Beverage: 100 servings	A-1	10.0	

TABLE 4. Recommended Menu for the Desert (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 4</u>			59.4533
Breakfast			
Orange Juice	F-3-1		
Creamed Ground Beef	G-17-1	4.25	
Bread			
Margarine			
Peach Jam			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
Tomato Vegetable Noodle Soup with Crackers = 25 servings	I-5	1.5625	
Baked Luncheon Meat with Pineapple Sauce	G-36	0.2813	
Potatoes Au Gratin	J-18	7.0	
Buttered Green Beans	J-2-1		
Dill Pickles			
Bread			
Margarine			
Applesauce	F-2-1		
Butterscotch Brownies	C-4	0.5625	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Lemonade Beverage: 100 servings	A-1	10.0	
Dinner			
Beef and Gravy with Vegetables	G-6	1.4375	
Mashed Potatoes	J-17	3.375	
Corn Relish	J-11	0.5	
Biscuits	B-2	1.0	
Strawberry Jam			
Margarine			
Cranberry Crunch	C-18		
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Grape Beverage: 100 servings	A-1	10.0	

TABLE 4. Recommended Menu for the Desert (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 5</u>			66.8283
Breakfast			
Tomato Juice	F-4	3.75	
Hot Hominy Grits: 50 serving	D-6	2.25	
Scrambled Eggs Western Style	E-1	3.6250	
Bread			
Margarine			
Peanut Butter			
Grape Jelly			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
*Chiliburgers	G-16a	0.4688	
Hash Brown Potatoes	J-15	6.5	
Cabbage and Green Pepper Salad	H-1	3.8125	
Bread			
Margarine			
*Sliced Peaches			
Chocolate Cookie Bars	C-5-3	0.1875	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Fruit Punch Beverage:	A-1	10.0	
100 servings			
Dinner			
Shrimp Creole	G-44	4.0	
Steamed Rice	D-4	2.75	
Buttered Carrots and Peas	J-9		
Bread			
Margarine			
Apple Crisp	C-15-1		
Coffee: 25 servings	A-2	2.5313	
Cherry Beverage: 100 servings		10.0	
Tea: 25 servings		1.5625	

TABLE 4. Recommended Menu for the Desert (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 6</u>			63.5471
Breakfast			
Grapefruit and Orange Juice	F-3		
Roast Beef Hash	G-8	7.5	
Catsup			
Cheese Omelet	E-2	2.75	
Bread			
Margarine			
Peanut Butter			
Strawberry Jam			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
Chicken Pot Pie	G-22-1	4.6875	
Cranberry Sauce			
Mashed Potatoes	J-17	3.375	
Buttered Corn	J-10		
Bread			
Margarine			
Yellow Cake with Chocolate Icing	C-1, C-2	0.7188	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Orange Beverage: 100 servings	A-1	10.0	
Dinner			
Baked Ham, Macaroni and Tomatoes	G-30	4.6563	
Buttered Green Beans	J-2-1		
Bread			
Margarine			
Cherry Cobbler	C-10	0.3750	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Lemonade Beverage: 100 servings	A-1	10.0	

TABLE 4. Recommended Menu for the Desert (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 7</u>			55.6408
Breakfast			
Orange Juice	F-3-1		
Hot Oatmeal with Milk: 50 servings	D-6	3.875	
Scrambled Eggs	E-1	2.625	
Grilled Luncheon Meat	G-37		
Quick Coffee Cake	B-6	0.5	
Margarine			
Grape Jelly			
Peanut Butter			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
Beef Noodle Soup with Crackers: 25 servings	I-1	1.5625	
Barbecued Beef	G-2	2.375	
Buttered Peas	J-13		
*Cottage Cheese Salad	H-4	1.0625	
Bread			
Margarine			
Chocolate Brownies with Chocolate Icing	C-4, C-2	0.6563	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Fruit Punch Beverage: 100 servings	A-1	10.0	
Dinner			
*Ham Chunks with Pineapple Sauce	G-32		
Mashed Potatoes	J-17	3.375	
Buttered Succotash	J-20		
Bread			
Margarine			
Raisin Oatmeal Bars	C-6-3	0.1250	
Sliced Peaches			
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Cherry Beverage: 100 servings	A-1	10.0	

TABLE 4. Recommended Menu for the Desert (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 8</u>			52.4220
Breakfast			
Grapefruit Sections			
French Toast with	B-4	1.25	
Hot Maple Syrup			
Bacon	G-1		
Bread			
Margarine			
Peanut Butter			
Blackberry Jelly			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
*Hamburger and Gravy	G-9-1	2.0	
Mashed Potatoes	J-19	3.375	
Stewed Tomatoes	J-21		
Dill Pickles			
Bread			
Margarine			
Peach Cobbler	C-11	0.25	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Orange Beverage: 100 servings	A-1	10.0	
Dinner			
Chili Con Carne	G-27	1.75	
Steamed Rice	D-4	2.75	
Buttered Green Beans	J-2-1		
Corn Bread	B-3	1.3750	
Margarine			
Pears			
Chocolate Cookie Bars	C-5-3	0.1875	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Grape Beverage: 100 servings	A-1	10.0	

TABLE 4. Recommended Menu for the Desert (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 9</u>			61.2814
Breakfast			
Grapefruit and Orange Juice	F-3-1		
Scrambled Eggs with Bacon	E-1	2.625	
*Quick Coffee Cake	B-6	0.5	
Margarine			
Peanut Butter			
Strawberry Jam			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
Beef Patties Jardiniere	G-15	2.3750	
Mashed Potatoes	J-17	3.375	
Buttered Corn	J-10		
Pineapple and Cottage Cheese	H-4	1.0625	
Salad			
Bread			
Margarine			
Marble Cake with Chocolate Icing	C-1,C-2	0.7188	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Lemonade Beverage: 100 servings	A-1	10.0	
Dinner			
*Tomato Juice	F-4	3.75	
*Tuna Loaf	G-48	0.3750	
Macaroni and Cheese	D-2	6.8750	
Buttered Peas	J-13		
Bread			
Margarine			
Fruit Cocktail			
Sugar Cookie Bars	C-8-3	0.1406	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Fruit Punch Beverage:	A-1	10.0	
100 servings			

TABLE 4. Recommended Menu for the Desert (cont'd)

<u>Menu</u>	<u>Recipe No.</u>	<u>Water Required</u> (gallons)	<u>Required</u> (gal/day)
<u>Day 10</u>			63.0158
Breakfast			
Orange Juice	F-3-1		
Hot Oatmeal with Milk: 50 servings	D-6	3.875	
Roast Beef Hash	G-8	7.5	
Catsup			
Bread			
Margarine			
Peach Jam			
Coffee	A-2	10.125	
Cocoa: 25 servings		1.1719	
Lunch			
Baked Chicken and Rice	G-21-1	4.8125	
Cranberry Sauce			
Buttered Green Beans	J-2-1		
Biscuits	B-2	1.0	
Margarine			
Chocolate Brownies with Chocolate Icing	C-4, C-2	0.6563	
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Orange Beverage: 100 servings	A-1	10.0	
Dinner			
Onion Soup with Crackers: 25 servings	I-3	1.5625	
*Beef, Macaroni and Tomatoes	G-7	4.125	
*Buttered Succotash	J-20		
Dill Pickles			
Bread			
Margarine			
Cherry Crunch	C-18-1		
Coffee: 25 servings	A-2	2.5313	
Tea: 25 servings		1.5625	
Grape Beverage: 100 servings	A-1	10.0	

TABLE 5. Water Requirements for Proposed Menus for the Arctic and Desert*
(Per Meal for 100 Servings)

	Day 1		Day 2		Day 3		Day 4		Day 5	
	Arctic	Desert	Arctic	Desert	Arctic	Desert	Arctic	Desert	Arctic	Desert
Breakfast, Gallons	27	19	21	14	24	13	32	16	26	21
Lunch, Gallons	22	16	35	25	33	26	34	24	30	25
Dinner, Gallons	36	21	30	22	30	22	31	20	32	21
Total	85	56	86	61	87	61	97	60	88	67

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	Day 6		Day 7		Day 8		Day 9		Day 10	
	Arctic	Desert	Arctic	Desert	Arctic	Desert	Arctic	Desert	Arctic	Desert
Breakfast, Gallons	28	22	28	18	23	13	25	14	33	23
Lunch, Gallons	30	23	26	20	29	20	29	22	31	21
Dinner, Gallons	28	19	36	18	32	20	33	25	34	20
Total	86	64	90	56	84	53	87	61	98	64

Total Gallons Arctic Menu 887
Total Gallons Desert Menu 603
Total Gallons Difference 284

*Includes 39 gallons per day for beverages for the arctic and desert menus. Gallons are rounded up or down. This accounts for differences from data in Tables 10 and 11.

TABLE 6. Examples of Water Savings Utilizing Canned Products
(in gallons)

Item	Recipe No.	Prepared from Dehydrated Components	Prepared with Canned Components	Difference
Fruit Juices				
Orange	F-3	4.75	—	4.75
Grapefruit	F-3	4.75	—	4.75
Beef and Gravy with Vegetables	G-5	6.1875	1.4375 (G-6)	4.7188
Beefsteak and Gravy	G-9	6.0	2.0	4.0
Baked Spanish Beef Patties	G-12	4.375	0.375 (G-13)	4.0
Beef Patties Jardiniere	G-14	4.3125	2.375	1.7025
Baked Chicken and Rice	G-21	6.0625	4.8125	1.25
Chili con Carne	G-26	4.5	0.5 (G-27)	4.0
Creamed Ground Beef	G-17	6.75	4.25 (G-17-1)	2.5
Buttered Peas	J-15-1	4.0	—	4.0

TABLE 7. Ration Items Used Only for B Ration, Overseas, or Afloat

National Stock Number	Usage Restriction
8905-01-086-0395	Bacon, precooked, sliced, #10 can
8915-00-151-6566	Beans, green, dehydrated, compressed disc, #22½ can
8905-00-926-6196	Beef chunks with juices, canned, 29 oz can
8905-00-965-1681	Beef, diced, dehydrated, uncooked, #10 can
8905-00-823-7559	Beef patties, dehydrated, uncooked, #10 can
8905-00-753-6536	Beefsteak, dehydrated, uncooked, #10 can
8910-00-082-5734	Cheese, cottage, dehydrated, #10 can
8905-00-118-8588	Chicken, dehydrated, cooked, diced, #10 can
8940-00-151-6462	Chili con carne, dehydrated with beans, #10 can
8905-00-023-8284	Ham chunks with juices, canned, 29-oz can
8905-00-143-0969	Hamburgers without gravy, canned, 12-oz can
8930-00-240-0055	Jam, peach, #2½ can
8930-00-559-8307	Jam, strawberry, #2½ can
8930-00-543-7608	Jelly, blackberry, #2½ can
8930-00-543-7607	Jelly, grape, #2½ can
8930-00-543-7602	Peanut butter, #2½ can
8905-00-823-7095	Fish squares, dehydrated, uncooked, #10 can
8905-00-126-4020	Luncheon meat, canned, 6-lb can
8950-00-616-5469	Pickles, cucumber dill, #10 can
8915-00-164-6876	Potatoes, white, instant granules, 6% moisture, #10 can
8915-00-401-8480	Peas, dehydrated, compressed cooked discs, #2½ can
8905-00-935-6395	Pork chops, dehydrated, uncooked, #10 can
8905-00-753-6432	Shellfish, shrimp, dehydrated, #10 can
8950-00-577-5990	Vinegar, dry, synthetic, 4 oz pkg
8945-00-222-0567	Margarine, #10 can

Code Identification

b - overseas and afloat
d - B Ration use
f - therapeutic feeding
m - afloat only

TABLE 8. Items to be Rotated from the Desert Menu

National Stock Number	Item	Usage Restriction
8905-01-086-0395	Bacon, precooked, sliced, #10 can	b, d
8905-00-926-6196	Beef chunks with juices, canned, 29-oz can	d, f, m
8910-00-082-5734	*Cheese, cottage, dehydrated, #10 can	b, f
8905-00-753-6106	Chicken, canned, boned, 29-oz can	d, f, m
8905-00-023-8284	Ham chunks with juices, canned, 29-oz can	b, d
8905-00-143-0969	Hamburgers, without gravy, canned, 12-oz can	b, d
8905-00-126-4020	Luncheon meat, canned, 6-lb. can	d, m
8950-00-616-5469	*Pickles, cucumber, dill, #10 can	b, d
8915-00-164-6876	Potatoes, white, instant granules, #10 can 6% moisture	b, d
8905-00-753-6432	Shellfish, shrimp, dehydrated, #10 can	b, d, f
8950-00-577-5990	*Vinegar, dry, synthetic, 4-oz pkg.	b, d
8545-00-222-0567	*Margarine, #10 can	d
8930-00-240-0054	*Jam, peach, #2 1/2 can	b, d
8930-00-559-8307	*Jam, strawberry, #2 1/2 can	b, d
8930-00-543-7608	*Jelly, blackberry, #2 1/2 can	b, d
8930-00-543-7607	*Jelly, grape, #2 1/2 can	b, d
8930-00-543-7602	*Peanut butter, #2 1/2 can	b, d

Code Identification

b - overseas and afloat
d - B Ration use
f - therapeutic feeding
m - afloat only

*Stable under 12 mos. at 90°F.

TABLE 9. Gallons of Water for 100 Servings - Arctic

Day	1	2	3	4	5	6	7	8	9	10
Breakfast	27.3594	20.7344	24.2969	32.1094	25.7344	27.8594	28.4844	23.3594	24.7344	32.8594
Lunch	21.5469	34.3594	33.1875	33.7032	30.4844	30.1407	25.7032	28.7344	28.5782	31.3282
Dinner	36.2135	30.1719	29.7189	31.1719	32.3594	27.8907	35.5469	31.6719	33.3750	33.5782
Water for Food										
Breakfast	14.5000	7.8750	11.4375	19.2500	12.8750	15.0000	15.6250	10.5000	11.8750	20.0000
Lunch	8.6875	21.5000	20.3281	20.8438	17.6250	17.2813	12.8438	15.8750	15.7188	18.4688
Dinner	23.3541	17.3125	16.8595	18.3125	19.5000	15.0313	22.6875	18.8125	20.5156	20.7188
Water for Beverages										
Breakfast	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594
Lunch	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594
Dinner	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594	12.8594
Day Grand Total	85.1198	85.2657	87.2033	96.9845	88.5782	85.8908	89.7345	83.7657	86.6876	97.7658
Water for Food	46.5416	46.6875	48.6251	58.4063	50.0000	47.3126	51.1563	45.1875	48.1094	59.1876
Water for Beverages	38.5782	38.5782	38.5782	38.5782	38.5782	38.5782	38.5782	38.5782	38.5782	38.5782
10 Day Total	886.9959 or 887 gallons									
10 Day Average	88.69 or 89 gallons									
Water for Beverages Total	385.7820 or 386 gallons									
Water for Food Total	501.2139 or 501 gallons									

TABLE 10. Gallons of Water for 100 Servings - Desert

Day	1	2	3	4	5	6	7	8	9	10
Breakfast	19.4219	14.4219	13.4844	15.5469	20.9219	21.5469	18.2969	12.5469	14.4219	22.6719
Lunch	15.9063	24.8438	25.7891	23.5001	25.0626	22.8751	19.7501	19.7188	21.6251	20.5626
Dinner	20.6251	21.7813	21.8283	20.4063	20.8438	19.1251	17.5938	20.1563	25.2344	19.7813
Water for Food										
Breakfast	8.1250	31.1250	2.1875	4.2500	9.6250	10.2500	7.0000	1.2500	3.1250	11.3750
Lunch	1.8125	10.7500	11.6953	9.4063	10.9688	8.7813	5.6563	5.6250	7.5313	6.4688
Dinner	6.5315	7.6875	7.7345	6.3125	6.7500	5.0313	3.5000	6.0625	11.1406	5.6875
Water for Beverages										
Breakfast	11.2969	11.2969	11.2969	11.2969	11.2969	11.2969	11.2969	11.2969	11.2969	11.2969
Lunch	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938
Dinner	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938	14.0938
Day Grand Total	55.9533	61.0470	61.1018	59.4533	66.8283	63.5471	55.6408	52.4220	61.2814	63.0158
Water for Food	16.4088	21.5625	21.6173	19.9688	27.3438	24.0626	16.1563	12.9375	21.7969	23.5313
Water for Beverages	39.4845	39.4845	39.4845	39.4845	39.4845	39.4845	39.4845	39.4845	39.4845	39.4895
10 Day Total	600.2908	or 600	gallons							
10 Day Average	60.02	or 60	gallons							
Water for Beverages Total	394.8450	or 395	gallons							
Water for Food Total	205.4458	or 205	gallons							

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This document reports research undertaken at the US Army Natick Research and Development Command and has been assigned No. NATICK/TR-84/052 in the series of reports approved for publication.